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Sequence Listing was accepted.

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Reviewer: syedsaleem

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<110> University of Florida Research Foundation, Inc.
Klee, Harry J.
Tieman, Denise

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<130> UF.386CXC1

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<150> 60/558,504
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acccttgaag aaagcatcaa agaaactgtt gaaagtttga aggaaaagaa gtttttgga 1140

ggttcatctt ctatgtaaaa ggcttctcaa agcttttatg gttttgttga acaatactac 1200

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<213> Lycopersicon esculentum

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Lys Ala Ser Val Arg Asp Pro Asn Asp Pro Lys Lys Thr Gln His Leu
35 40 45

Leu Ser Leu Gly Gly Ala Lys Glu Arg Leu His Leu Phe Lys Ala Asn
50 55 60

Leu Leu Glu Glu Gly Ser Phe Asp Ala Val Val Asp Gly Cys Glu Gly
65 70 75 80

Val Phe His Thr Ala Ser Pro Phe Tyr Tyr Ser Val Thr Asp Pro Gln
85 90 95

Ala Glu Leu Leu Asp Pro Ala Val Lys Gly Thr Leu Asn Leu Leu Gly
100 105 110

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Ser Cys Ala Lys Ala Pro Ser Val Lys Arg Val Val Leu Thr Ser Ser
        115                 120                 125

Ile Ala Ala Val Ala Tyr Ser Gly Gln Pro Arg Thr Pro Glu Val Val
    130                 135                 140

Val Asp Glu Ser Trp Trp Thr Ser Pro Asp Tyr Cys Lys Glu Lys Gln
145                 150                 155                 160

Leu Trp Tyr Val Leu Ser Lys Thr Leu Ala Glu Asp Ala Ala Trp Lys
                165                 170                 175

Phe Val Lys Glu Lys Gly Ile Asp Met Val Val Val Asn Pro Ala Met
            180                 185                 190

Val Ile Gly Pro Leu Leu Gln Pro Thr Leu Asn Thr Ser Ser Ala Ala
        195                 200                 205

Val Leu Ser Leu Val Asn Gly Ala Glu Thr Tyr Pro Asn Ser Ser Phe
    210                 215                 220

Gly Trp Val Asn Val Lys Asp Val Ala Asn Ala His Ile Leu Ala Phe
225                 230                 235                 240

Glu Asn Pro Ser Ala Asn Gly Arg Tyr Leu Met Val Glu Arg Val Ala
                245                 250                 255

His Tyr Ser Asp Ile Leu Lys Ile Leu Arg Asp Leu Tyr Pro Thr Met
            260                 265                 270

Gln Leu Pro Glu Lys Cys Ala Asp Asp Asn Pro Leu Met Gln Asn Tyr
        275                 280                 285

Gln Val Ser Lys Glu Lys Ala Lys Ser Leu Gly Ile Glu Phe Thr Thr
    290                 295                 300

Leu Glu Glu Ser Ile Lys Glu Thr Val Glu Ser Leu Lys Glu Lys Lys
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Phe Phe Gly Gly Ser Ser Ser Met
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tcaacaccaa caacaccaag aaaaaacttg aatctttcag tgacggagcc aggaaaaaat 180

gatggaccta gtttggattg tacattgatg aattatattg atacactcac ccaacgtatc 240

aactatcata tcggttatcc agttaacata tgttatgagc actatgctaa tttagcccca 300

cttttacaat ttcatttaaa taattgtggt gatccatttc ttcaaaatac tgtggatttt 360

cattcaaagg attttgaagt ggctgtttta aattggtttg ctgatttatg ggaaattgaa 420

agagatcaat attggggcta tgtaacaaat ggtggtactg aaggaaattt acatggcatt 480

ttggttggga gagaattgtt tccagatgga attttatatg catcaaaaga ctctcattac 540

tcagtggcta aggcagcaat gatgtataga atggattttg aaaatattaa cgcatcaata 600

aatggagaaa tcgattattc tgatttgaaa gttaaattac ttcaaaacaa gggaaaacca 660

gcgataatta atgttacaat tggcactact tttaaaggag ctgttgatga tcttgatgtt 720

attcttcaaa tacttgaaga gtgtggttac acacgagatc aattttatat tcattgtgat 780

gcagcactaa atggacttat tattcctttt attaaaaata tgattacttt caagaagcca 840

attggaagtg tgacaatttc tggtcacaag tttttgggat gtccaatgcc ttgtggagtt 900

caaataacaa ggaaaagtta cattaataac ctttcgagaa gagtcgaata tattgcttct 960

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ataagtgcta aaggtcaaat tggttttcag aaagacgtta agagatgttt tgacaatgct 1080

aagtacttga aagaccgtct tcagcaagca ggaatcagcg tcatgctgaa tgagcttagc 1140

atcatagttg tcctcgagag gcctcgtgac catgaattcg ttcgtcgttg gcaattatct 1200

tgtgtgagag atatggcaca tgttattgtt atgccaggca taactagaga aactcttgat 1260

ggttttatta atgatttgct tcaacaaagg aaaaaatggt atcaagatgg aagaattagc 1320

cctccttgtg ttgcaaatga tattggtgct caaaattgtg cttgctctta tcataaaatt 1380

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<211> 465
<212> PRT
<213> Lycopersicon esculentum

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20 25 30

Glu Met Met Arg Leu Lys Val Ser Ser Thr Pro Thr Thr Pro Arg Lys
35 40 45

Asn Leu Asn Leu Ser Val Thr Glu Pro Gly Lys Asn Asp Gly Pro Ser
50 55 60

Leu Asp Cys Thr Leu Met Asn Tyr Ile Asp Thr Leu Thr Gln Arg Ile
65 70 75 80

Asn Tyr His Ile Gly Tyr Pro Val Asn Ile Cys Tyr Glu His Tyr Ala
85 90 95

Asn Leu Ala Pro Leu Leu Gln Phe His Leu Asn Asn Cys Gly Asp Pro
100 105 110

Phe Leu Gln Asn Thr Val Asp Phe His Ser Lys Asp Phe Glu Val Ala
115 120 125

Val Leu Asn Trp Phe Ala Asp Leu Trp Glu Ile Glu Arg Asp Gln Tyr
130 135 140

Trp Gly Tyr Val Thr Asn Gly Gly Thr Glu Gly Asn Leu His Gly Ile
145 150 155 160

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Leu Val Gly Arg Glu Leu Phe Pro Asp Gly Ile Leu Tyr Ala Ser Lys
                165                 170                 175

Asp Ser His Tyr Ser Val Ala Lys Ala Ala Met Met Tyr Arg Met Asp
            180                 185                 190

Phe Glu Asn Ile Asn Ala Ser Ile Asn Gly Glu Ile Asp Tyr Ser Asp
        195                 200                 205

Leu Lys Val Lys Leu Leu Gln Asn Lys Gly Lys Pro Ala Ile Ile Asn
    210                 215                 220

Val Thr Ile Gly Thr Thr Phe Lys Gly Ala Val Asp Asp Leu Asp Val
225                 230                 235                 240

Ile Leu Gln Ile Leu Glu Glu Cys Gly Tyr Thr Arg Asp Gln Phe Tyr
                245                 250                 255

Ile His Cys Asp Ala Ala Leu Asn Gly Leu Ile Ile Pro Phe Ile Lys
            260                 265                 270

Asn Met Ile Thr Phe Lys Lys Pro Ile Gly Ser Val Thr Ile Ser Gly
        275                 280                 285

His Lys Phe Leu Gly Cys Pro Met Pro Cys Gly Val Gln Ile Thr Arg
    290                 295                 300

Lys Ser Tyr Ile Asn Asn Leu Ser Arg Arg Val Glu Tyr Ile Ala Ser
305                 310                 315                 320

Val Asp Ala Thr Ile Ser Gly Ser Arg Asn Gly Leu Thr Pro Ile Phe
                325                 330                 335

Leu Trp Tyr Ser Ile Ser Ala Lys Gly Gln Ile Gly Phe Gln Lys Asp
            340                 345                 350

Val Lys Arg Cys Phe Asp Asn Ala Lys Tyr Leu Lys Asp Arg Leu Gln
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Gln Ala Gly Ile Ser Val Met Leu Asn Glu Leu Ser Ile Ile Val Val
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Leu Glu Arg Pro Arg Asp His Glu Phe Val Arg Arg Trp Gln Leu Ser
385 390 395 400

Cys Val Arg Asp Met Ala His Val Ile Val Met Pro Gly Ile Thr Arg
405 410 415

Glu Thr Leu Asp Gly Phe Ile Asn Asp Leu Leu Gln Gln Arg Lys Lys
420 425 430

Trp Tyr Gln Asp Gly Arg Ile Ser Pro Pro Cys Val Ala Asn Asp Ile
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Gly Ala Gln Asn Cys Ala Cys Ser Tyr His Lys Ile Asp Tyr Ile Ile
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Ala
465

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<211> 1416
<212> DNA
<213> Lycopersicon esculentum

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aaacagaaaa tggcacaacc aggtgcagga ccaaggaaga acttggaact tgaggtcatg 180

gagcctgcat tgaagaatga tggtccttct ttggacacta tcttggttaa ttatttggac 240

acacttacac aacgagtcaa ttatcattta ggttatccag tcaacatatg ttatgatcac 300

tatgcaacgc tagcaccact tttgcagttt cacctaaaca attgtggtga tcctttccta 360

caaaatactg tcgatttcca ttctaaagac tttgaagtgg ctgttttgaa ttggtttgca 420

aaactttggg aaattgaaaa ggatcaatat tggggatatg ttaccaatgg tggcaccgaa 480

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tcaaaagact ctcattactc agtattcaaa gctgcaagaa tgtatagaat ggattcagaa 600

acaatcaaca catcagtaaa tggagagatg gattattcag atttaagagc aaagttactt 660

caaaataagg ataaaccagc tattataaat gtcacaattg gaactacatt caaaggagca 720

atcgatgacc tggatgttat tcttgaaata ctcaaagaat gtggctattc acaagatcga 780

ttttacattc actgtgatgc agcactatgt ggtcttatga ccccttttat aaacaatatg 840

attagtttca agaagccaat tggaagtgtc acaatttctg gacacaagtt tttgggatgt 900

ccaatgcctt gtggtgtcca aataacaaga aaaagctaca tcaataatct ctcaacaaat 960

gtggaataca ttgcttctgt ggatgccact atttctggta gccgtaacgg tttaactcca 1020

attttcttat ggtatagctt gagcgcaaaa ggtcaagttg gacttcaaaa ggatgttaaa 1080

agatgtctcg acaatgccaa atatttgaaa gatcgtcttc aacaagcagg gataagtgtc 1140

atgctgaatg agctaagcat catagttgta cttgaaaggc ctcgtgacca tgaatttgtg 1200

cgtcgttggc aactctcatg cgtcaaggat atggcacatg ttattgtgat gccaggaatc 1260

acacgagaaa tgcttgacaa cttcatgagt gaattagtgc aacaaagaaa agtatggtat 1320

caaaatggaa agactgatcc tccttgtgtt ggagaggata ttggtgctca aaattgtgca 1380

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<212> PRT
<213> Lycopersicon esculentum

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20 25 30

Leu Phe Pro Asn Val Asp Asn Lys Lys Gln Lys Met Ala Gln Pro Gly
35 40 45

Ala Gly Pro Arg Lys Asn Leu Glu Leu Glu Val Met Glu Pro Ala Leu
50 55 60

Lys Asn Asp Gly Pro Ser Leu Asp Thr Ile Leu Val Asn Tyr Leu Asp
65 70 75 80

Thr Leu Thr Gln Arg Val Asn Tyr His Leu Gly Tyr Pro Val Asn Ile
85 90 95

Cys Tyr Asp His Tyr Ala Thr Leu Ala Pro Leu Leu Gln Phe His Leu
100 105 110

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Asn Asn Cys Gly Asp Pro Phe Leu Gln Asn Thr Val Asp Phe His Ser
        115                 120                 125

Lys Asp Phe Glu Val Ala Val Leu Asn Trp Phe Ala Lys Leu Trp Glu
    130                 135                 140

Ile Glu Lys Asp Gln Tyr Trp Gly Tyr Val Thr Asn Gly Gly Thr Glu
145                 150                 155                 160

Gly Asn Leu His Gly Ile Leu Leu Gly Arg Glu Leu Leu Pro Glu Gly
                165                 170                 175

Ile Leu Tyr Ala Ser Lys Asp Ser His Tyr Ser Val Phe Lys Ala Ala
            180                 185                 190

Arg Met Tyr Arg Met Asp Ser Glu Thr Ile Asn Thr Ser Val Asn Gly
        195                 200                 205

Glu Met Asp Tyr Ser Asp Leu Arg Ala Lys Leu Leu Gln Asn Lys Asp
    210                 215                 220

Lys Pro Ala Ile Ile Asn Val Thr Ile Gly Thr Thr Phe Lys Gly Ala
225                 230                 235                 240

Ile Asp Asp Leu Asp Val Ile Leu Glu Ile Leu Lys Glu Cys Gly Tyr
                245                 250                 255

Ser Gln Asp Arg Phe Tyr Ile His Cys Asp Ala Ala Leu Cys Gly Leu
            260                 265                 270

Met Thr Pro Phe Ile Asn Asn Met Ile Ser Phe Lys Lys Pro Ile Gly
        275                 280                 285

Ser Val Thr Ile Ser Gly His Lys Phe Leu Gly Cys Pro Met Pro Cys
    290                 295                 300

Gly Val Gln Ile Thr Arg Lys Ser Tyr Ile Asn Asn Leu Ser Thr Asn
305                 310                 315                 320

Val Glu Tyr Ile Ala Ser Val Asp Ala Thr Ile Ser Gly Ser Arg Asn
                325                 330                 335

Gly Leu Thr Pro Ile Phe Leu Trp Tyr Ser Leu Ser Ala Lys Gly Gln
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340 345 350

Val Gly Leu Gln Lys Asp Val Lys Arg Cys Leu Asp Asn Ala Lys Tyr
355 360 365

Leu Lys Asp Arg Leu Gln Gln Ala Gly Ile Ser Val Met Leu Asn Glu
370 375 380

Leu Ser Ile Ile Val Val Leu Glu Arg Pro Arg Asp His Glu Phe Val
385 390 395 400

Arg Arg Trp Gln Leu Ser Cys Val Lys Asp Met Ala His Val Ile Val
405 410 415

Met Pro Gly Ile Thr Arg Glu Met Leu Asp Asn Phe Met Ser Glu Leu
420 425 430

Val Gln Gln Arg Lys Val Trp Tyr Gln Asn Gly Lys Thr Asp Pro Pro
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Cys Val Gly Glu Asp Ile Gly Ala Gln Asn Cys Ala Cys Ser Tyr His
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Lys Ile Asp Tyr Ile Cys Pro
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<212> DNA
<213> Lycopersicon pennellii

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aaacaaaagg tgcaacaatc aggtgcaggg ccaaggaaga acttacaact tgaagtcatg 180

gaacctgcat tgaacaatgc tggtccctct ttggacacta tattggtcaa ttatttagac 240

acacttacac aacgagtcaa ttatcattta ggttatccag tcaacatttg t